

M O D E L 4 0 5 0

S E R V I C E M A N U A L

REF DESIG OR ITEM NO.	DESCRIPTION	MFG PART NO. OR TYPE	SOAR STOCK NO.	Q'TY
PCB ASSEMBLY				
I C				
IC 1	A/D Converter	MSM6266		1
IC 2	Microcomputer	MSM6502B-44		1
IC 3	Voltage Reference	LT1034CZ		1
TRANSISTOR				
Q 1	FET	2SK372-V		1
Q 2	NPN	DTC114TF		1
Q 3	FET	2SK372-V		1
Q 4	PNP	2SA874-R		1
Q 5	PNP	2SA874-R		1
Q 6	NPN	2SC536-SP-F		1
Q 7	NPN	2SC536-SP-F		1
Q 8	NPN	2SD879		1
DIODE				
D 1	S i	DAN201		1
D 2	S i	DAN201		1
D 3	S i	DAN201		1
D 4	S i	1S1588		1
D 5	S i	DAP201		1
D 6	S i	1S1588		1
D 7	S i	1SS227		1
D 8	S i	DAP201		1
D 9	S i	1S1588		1
D 10	S i	1SS227		1
D 11	Zener	HZ-7A		1
D 12	S i	GMA01		1
D 13	S i	GMA01		1
D 14	S i	GMA01		1

REF DESIG OR ITEM NO.	DESCRIPTION	MFG PART NO. OR TYPE	SOAR STOCK NO.	Q'TY
X 1	Crystal 32.768kHz			1
P 1	Thermistor 1k Ω			1
Z 1	Varistor 2400 V			1
BZ	Buzzer			1
K	Relay			1
LCD	Display	FRD-8320		1
H 1	HIC	H-105B		1
H 2	HIC	H-111		1
H 3	HIC	H-104C		1
H 4	HIC	H-110		1
L 1	Inductor 12.5 μ H			1

REF DESIG OR ITEM NO.	DESCRIPTION				MFG PART NO. OR TYPE	SOAR STOCK NO.	Q'TY
RESISTOR	- UNIT : OHM-						
R 1	M F	1M	± 5%	0.8W			1
R 2	M F	200k	± 5%	0.16W			1
R 3	M F	9.9M	± 1%	1W			1
R 4	M F	13k	± 1%	0.16W			1
R 5	M F	30.1k	± 0.25%	0.25W			1
R 6	M F	115k	± 0.5%	0.25W			1
R 7	M F	16.9k	± 0.25%	0.25W			1
R 8	M F	300	± 1%	0.16W			1
R 9	M F	560k	± 5%	0.16W			1
R 10	M F	160k	± 5%	0.16W			1
R 11	M F	110k	± 5%	0.16W			1
R 12	M F	330k	± 5%	0.16W			1
R 13	M F	1k	± 5%	0.16W			1
R 14	M F	33k	± 5%	0.16W			1
R 15	M F	470	± 5%	0.16W			1
R 16	M F	470	± 5%	0.16W			1
R 17	M F	10M	± 0.25%	0.3W			1
R 18	M F	1M	± 5%	0.16W			1
R 19	M F	4.7k	± 5%	0.16W			1
R 20	M F	1M	± 5%	0.16W			1
R 21	M F	1M	± 5%	0.16W			1
R 22	M F	9k	± 0.1%	0.25W			1
R 23	M F	1k	± 0.1%	0.25W			1
R 24	W W	5	± 0.5%	1W			1
R 25	W W	0.005			SH 1422-01A		1
R 26	M F	1k	± 5%	0.16W			1
R 27	M F	1M	± 5%	0.16W			1
R 28	M F	3k	± 2%	0.16W	+3000ppm		1

REF DESIG OR ITEM NO.	DESCRIPTION	MFG PART NO. OR TYPE	SOAR STOCK NO.	Q'TY
POTENTIO- METER	- UNIT : OHM-			
RV 1	Cermet 50k 0.3W $\pm 20\%$			1
RV 2	Cermet 200k 0.3W $\pm 25\%$			1
RV 3	Cermet 1k 0.3W $\pm 25\%$			1
RV 4	Cermet 1k 0.3W $\pm 20\%$			1
CAPASITOR	- UNIT : FARAD-			
C 1	Polyes 1000V 0.022 μ $\pm 10\%$			1
C 2	Polyes 50V 0.022 μ $\pm 10\%$			1
C 3	A L 50V 2.2 μ $\pm 20\%$			1
C 4	Polyes 50V 0.068 μ $\pm 5\%$			1
C 5	CER 50V 1000p $\pm 5\%$			1
C 6	CER 50V 1000p $\pm 5\%$			1
C 7	CER 50V 1000p $\pm 5\%$			1
C 8	CER 50V 1000p $\pm 5\%$			1
C 9	A L 16V 10 μ $\pm 20\%$			1
C 10	A L 50V 0.47 μ $\pm 20\%$			1
C 11	A L 16V 10 μ $\pm 20\%$			1
C 12	A L 16V 10 μ $\pm 20\%$			1
C 13	A L 16V 10 μ $\pm 20\%$			1
C 14	CER 50V 22p $\pm 5\%$			1
C 15	CER 50V 22p $\pm 5\%$			1
C 16	CER 50V 82p $\pm 5\%$			1
C 17	Polyes 50V 0.001 μ $\pm 10\%$			1
C 18	Polyes 50V 0.0047 μ $\pm 10\%$			1
C 19	CER 25V 0.01 μ +80/-20%			1
C 20	A L 16V 10 μ $\pm 20\%$			1
CA 1	C-Network 1000p \times 6 $\pm 20\%$			1

REF DESIG OR ITEM NO.	DESCRIPTION	MFG PART NO. OR TYPE	SOAR STOCK NO.	Q'TY
SWITCH				
S 1	Rotary FUNCTION			1
S 2	Push POWER			1
S 3	Tact DATA-H			1
FUSE				
F 1	0.5A-F/250 V ϕ 5 \times 20mm			1
F 2	4A-F/600 V ϕ 10 \times 35mm			1
JUMPER				
J 1	RED 115mm			1
P C B	P. C. Board	# 4050-01D-S		1

REF DESIG OR ITEM NO.	DESCRIPTION	MFG PART NO. OR TYPE	SOAR STOCK NO.	Q'TY
1	Rubber Foot	SL 1655-01A		2
2	Stand	ST 1587-01A		1
3	Rear Case Ass'y Rear Case (Caution Ref, No.)	ST 1583-01A ST 1639-01A		1 (1)
4	Coil Spring	SK 1026-01A		1
5	Shield Al Film (Rear)	SL 1728-03A		1
6	Insulation Film	SL 1773-02A		1
7	Input Jack	SH 1458-01A		3
8	O Ring	P 6		3
9	Fuse Holder	SL 1677-01A		2
10	Fuse Holder	SH 1090-01		2
11	Case, Battery	ST 1586-01A		1
12	Battery Contact (W)	SL 1679-01A		1
13	Battery Contact (S)	SL 1678-02A		2
15	Shield Al Film (Front)	SL 1727-02A		1
16	Color for Shaft	CSTW-6		1
17	Front Case Ass'y Front Case (25) Filter Silk-Print Ref, No. (14) Insert Metal	SY 1012-01A ST 1582-01A ST 1588-01A SN 2392-01A SH 1405-01C		1 (1) (1) (1) (4)
18	Rubber, Switch Knob B (White)	ST 1612-01A		1

REF DESIG OR ITEM NO.	DESCRIPTION	MFG PART NO. OR TYPE	SOAR STOCK NO.	Q'TY
1 9	Switch Knob Stopper	ST 1611-01A		1
2 0	Side Switch Plate	SN 2399-01A		1
2 1	Dust Protector	SL 1696-01A		1
2 3	Rotary Knob Ass'y			1
	Rotary, Knob	ST 1589-01A		(1)
	(22) Shaft	SH 1435-02A		(1)
2 4	Switch Plate	SN 2397-01A		1
2 6	Rubber, Switch Cover (Red)	ST 1622-01A		1
2 7	Rubber, Switch Knob C (White)	ST 1594-01A		3
2 8	Switch Knob A	ST 1592-01A		1
2 9	Switch Stopper	ST 1590-01A		1
3 0	LCD Holder B	ST 1585-01A		1
3 1	LCD Conductive Rubber	SH 1443-01B		1
3 2	LCD Holder A	ST 1584-01A		1
3 3	PHILIPS Tapping	M2.6 × 6		7
3 4	Shield Box	SL 1729-01A		1
3 5	Pan Head Screw	M3 × 12		4
3 6	Serial Label	SN 2398-01A		

☐ Adjustment & Check

☐ Model 4050

Step	Item	Function	Range	Input	Adjustment	Tolerance					
1	DC Voltage	≡ V	400mV	Short	—	-0.1 ~ 0.1mV					
				380.00mV	RV 1	379.6 ~ 380.4mV					
				-380.00mV	—	-379.6 ~ -380.4mV					
2			4 V	3.8000 V	RV 2	3.796 ~ 3.804 V					
3			40 V	38.000 V	—	37.96 ~ 38.04 V					
4			400 V	380.00 V	—	379.6 ~ 380.4 V					
5			1000 V	1000.0 V	—	997 ~ 1003 V					
1	AC Voltage	~ V	400mV	Short	—	0 ~ 0.2mV					
				380.00mV 100Hz	RV 3	377.2 ~ 382.8mV					
2			4 V	3.8000 V 100Hz	—	3.772 ~ 3.828 V					
3			40 V	38.000 V 100Hz	—	37.72 ~ 38.28 V					
4			400 V	380.00 V 100Hz	—	377.2 ~ 382.8 V					

☐ Adjustment & Check

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Step	Item	Function	Range	Input	Adjustment	Tolerance
5	AC Voltage	~ V	750 V	750.00 V 100Hz	—	745 ~ 755 V
1	DC Current	≡ A	40mA	Short	—	-0.02 ~ 0.02
				38.000mA	—	37.62 ~ 38.38
2			400mA	380.00mA	—	375.5 ~ 384.5
3			10 A	10.000 A	—	9.88 ~ 10.12
1	AC Current	~ A	40mA	Short	—	0.00 ~ 0.05
				38.000mA 100Hz	—	37.24 ~ 38.76
2			400mA	380.00mA 100Hz	—	372.4 ~ 387.6
3			10 A	10.000 A 100Hz	—	9.78 ~ 10.22

☐ Adjustment & Check

☐ Model 4050

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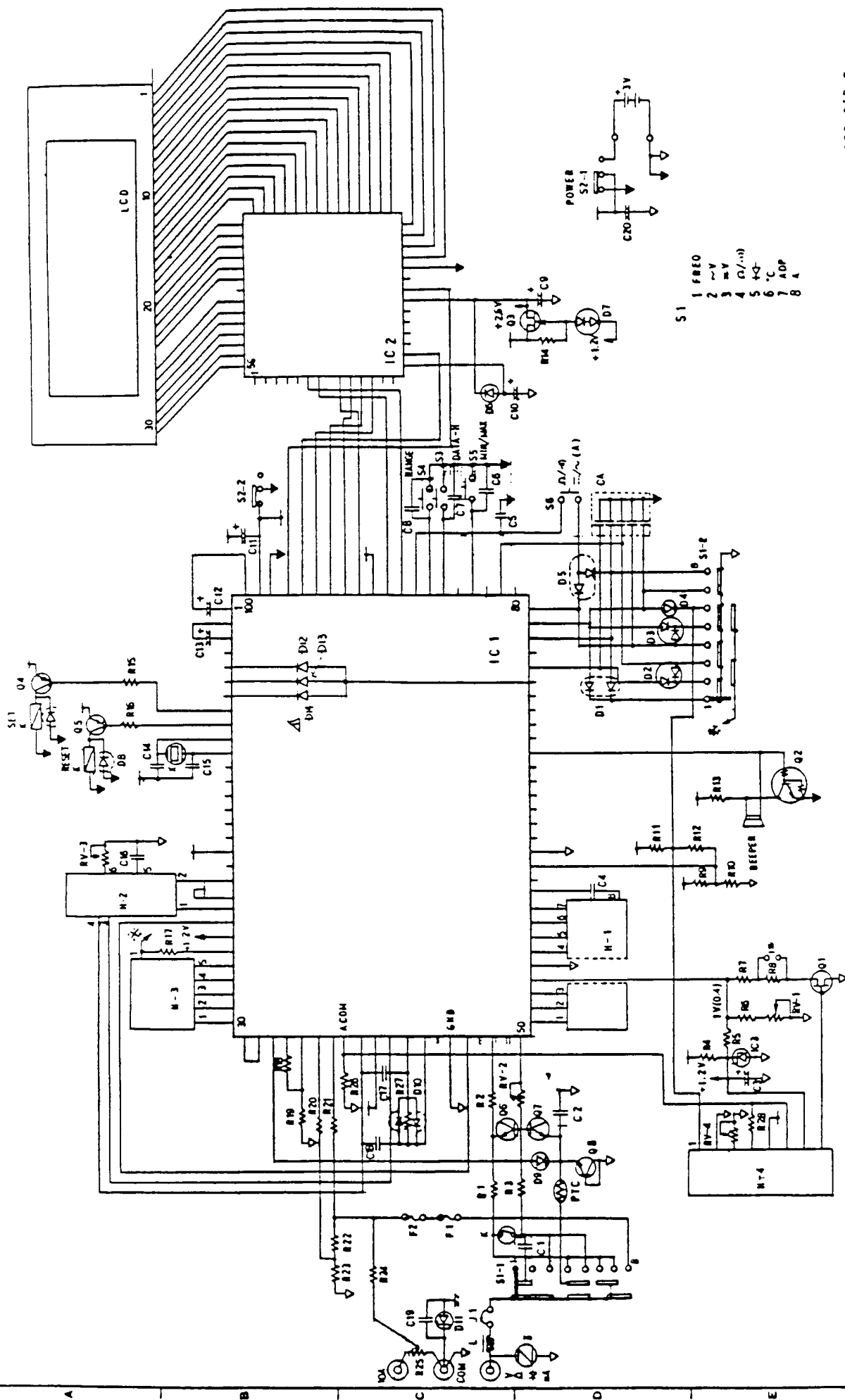
Step	Item	Function	Range	Input	Adjustment	Tolerance
1	Resistance	Ω	400 Ω	Short	—	0.0 ~ 0.2 Ω
				380.00 Ω	—	378.9 ~ 381.1 Ω
2			4k Ω	3.8000k Ω	—	3.789 ~ 3.811k Ω
3			40k Ω	38.000k Ω	—	37.89 ~ 38.11k Ω
4			400k Ω	380.00k Ω	—	378.9 ~ 381.1k Ω
5			4M Ω	3.8000M Ω	—	3.781 ~ 3.819M Ω
6			40M Ω	38.000M Ω	—	37.62 ~ 38.38M Ω
1	Frequency			Short	—	0 ~ 1
				9000Hz 1 V	—	8998 ~ 9002Hz
*1	Temperature test		-20 ~ 700°C	Short	RV 4	Room Temperature \pm 2°C
1	Continuity-check	\Rightarrow	400 Ω	0 ~ 100 Ω	—	40 Ω or less

* Before starting calibration, allow thirty minutes for multimeter stabilization to room temperature.

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PCB NO 4050-01D-5